Serial No.: 09/996,202

Filed: November 28, 2001

Page : 2 of 11

## Amendments to the Claims:

This listing of claims replaces all prior versions and listings of claims in the application:

## Listing of Claims:

1. (currently amended) A compound of the following formula:

$$\begin{bmatrix}
R^1 & R^2 \\
A & B
\end{bmatrix}$$

$$\begin{bmatrix}
R^5 \\
R^4 & R^3
\end{bmatrix}$$

wherein each of  $R^1$ - $R^4$  is, independently, H, substituted or unsubstituted  $C_{1-6}$  alkyl, OH,  $C_{1-6}$  alkoxy,  $N(R^6)(R^7)$ , in which each of  $R^6$  and  $R^7$  is, independently, H or substituted or unsubstituted  $C_{1-6}$  alkyl,  $NO_2$ , CN, or  $CO_2R^8$ , in which  $R^8$  is H or  $C_{1-6}$  alkyl; and

wherein  $R^5$  is H, substituted or unsubstituted  $C_{1-6}$  alkyl, substituted or unsubstituted  $C_{2-6}$  alkenyl, substituted or unsubstituted  $C_{2-6}$  alkynyl, unsubstituted  $C_{6-20}$  aryl or  $C_{6-20}$  aryl substituted with OH,  $C_{1-6}$  alkoxy[[,]] or  $N(R^{26})(R^{27})[[,]]$ ; alkylaryl in which the aryl moiety is substituted with one or more  $C_{1-6}$  alkyl groups further substituted with hydroxyl, protected hydroxyl, amino, protected amino, carboxy, protected carboxy, alkoxy, halo, CN, or  $NO_2$ , substituted or unsubstituted  $C_{4-20}$  heteroaryl,  $C_{10-20}$  diarylaminoaryl, or is absent, or B and D, together with  $R^5$  and  $R^{11}$ , are substituted or unsubstituted aryl; in which each of  $R^{26}$  and  $R^{27}$  is, independently, H, substituted or unsubstituted  $C_{1-6}$  alkyl, substituted or unsubstituted aryl, substituted or unsubstituted or unsubstituted alkylaryl,  $NO_2$ , CN, or  $CO_2R^{28}$ , in which  $R^{28}$  is H or  $C_{1-6}$  alkyl[[.]];

wherein A is O, S,  $N(R^9)$  in which  $R^9$  is absent, H, substituted or unsubstituted alkyl, or substituted or unsubstituted aryl, N=N, or N=C( $R^{10}$ ) in which the C is adjacent to B and in which  $R^{10}$  is substituted or unsubstituted alkyl, or substituted or unsubstituted aryl;

Serial No.: 09/996,202

Filed: November 28, 2001

Page : 3 of 11

wherein B is C or N;

wherein D is N, NH, or  $C(R^{11})$  in which  $R^{11}$  is substituted or unsubstituted alkyl, or substituted or unsubstituted aryl, or B and D, together with  $R^5$  and  $R^{11}$  are substituted or unsubstituted aryl; and

wherein E is C or Si;

provided that when A is O and D is N, then B is C and the floating double bond is between B and D;

further provided that when A is N(R<sup>9</sup>) and R<sup>9</sup> is absent, then B is N, R<sup>5</sup> is absent, D is NH, and the floating double bond is between A and B;

further provided that when A is N=N, then B is C, D is N, and the floating double bond is between B and D;

further provided that when A is  $N=C(R^{10})$ , then B is N,  $R^5$  is absent, D is  $C(R^{11})$ , and the floating double bond is between B and D;

further provided that when A is  $N(R^9)$  and  $R^9$  is H, alkyl, or aryl, then B is C, D is  $C(R^{11})$ , and the floating double bond is between B and D; and

further provided that when A is O or S and D is  $C(R^{11})$ , then B is C and the floating double bond is between B and D.

- 2. (original) The compound of claim 1, wherein A is O.
- 3. (original) The compound of claim 2, wherein each of  $R^1$ - $R^4$  is H.
- 4. (currently amended) The compound of claim 2, wherein  $R^5$  is unsubstituted  $C_{6-20}$  aryl or  $C_{6-20}$  aryl substituted with OH,  $C_{1-6}$  alkoxy[[,]] or  $N(R^{26})(R^{27})[[,]]$ ; or alkylaryl in which the aryl moiety is substituted with one or more  $C_{1-6}$  alkyl groups further substituted with hydroxyl, protected hydroxyl, amino, protected amino, carboxy, protected carboxy, alkoxy, halo, CN, or  $NO_2$ ; in which each of  $R^{26}$  and  $R^{27}$  is, independently, H, substituted or unsubstituted  $C_{1-6}$  alkyl, substituted or unsubstituted aryl, substituted or unsubstituted alkylaryl,  $NO_2$ , CN, or  $CO_2R^{28}$ , in which  $R^{28}$  is H or  $C_{1-6}$  alkyl.

Serial No.: 09/996,202

Filed: November 28, 2001

Page : 4 of 11

5. (previously presented) The compound of claim 4, wherein R<sup>5</sup> has the following formula:

$$R^{25}$$
 $R^{24}$ 
 $R^{24}$ 
 $R^{22}$ 

wherein each of  $R^{21}$ - $R^{25}$  is, independently, H,  $C_{1-6}$  alkyl groups further substituted with hydroxyl, protected hydroxyl, amino, protected amino, carboxy, protected carboxy, alkoxy, halo, CN, or NO<sub>2</sub>; OH,  $C_{1-6}$  alkoxy,  $N(R^{26})(R^{27})$ , in which each of  $R^{26}$  and  $R^{27}$  is, independently, H, substituted or unsubstituted  $C_{1-6}$  alkyl, substituted or unsubstituted aryl, substituted or unsubstituted alkylaryl, NO<sub>2</sub>, CN, or  $CO_2R^{28}$ , in which  $R^{28}$  is H or  $C_{1-6}$  alkyl.

- 6. (original) The compound of claim 5, wherein each of R<sup>21</sup>-R<sup>25</sup> is, independently, H or methoxy.
  - 7. (canceled)
- 8. (original) The compound of claim 5, wherein each of R<sup>21</sup>-R<sup>25</sup> is, independently, H or trifluoromethyl.

Serial No.: 09/996,202

Filed: November 28, 2001

Page : 5 of 11

9. (original) The compound of claim 1, wherein the compound has the following formula:

- 10. (canceled)
- 11. (original) The compound of claim 1, wherein the compound has the following formula:

Serial No.: 09/996,202

Filed: November 28, 2001

Page : 6 of 11

12. (original) The compound of claim 1, wherein A is N(R<sup>9</sup>), in which R<sup>9</sup> is absent.

13. (original) The compound of claim 12, wherein the compound has the following formula:

14. (original) The compound of claim 1, wherein the compound has the following formula:

Serial No.: 09/996,202

Filed: November 28, 2001

Page : 7 of 11

15. (currently amended) An electroluminescence device comprising a substrate, a hole transporting layer, an emitting layer, and an electron transporting layer, wherein at least one of the hole transporting layer, the emitting layer, and the electron transporting layer comprises a compound having the following formula:

$$\begin{bmatrix}
R^1 & R^2 \\
A & B
\end{bmatrix}$$

$$\begin{bmatrix}
R^4 & R^3
\end{bmatrix}$$

wherein each of  $R^1$ - $R^4$  is, independently, H, substituted or unsubstituted  $C_{1-6}$  alkyl, OH,  $C_{1-6}$  alkoxy,  $N(R^6)(R^7)$ , in which each of  $R^6$  and  $R^7$  is, independently, H or substituted or unsubstituted  $C_{1-6}$  alkyl,  $NO_2$ , CN, or  $CO_2R^8$ , in which  $R^8$  is H or  $C_{1-6}$  alkyl; and

wherein  $R^5$  is H, substituted or unsubstituted  $C_{1-6}$  alkyl, substituted or unsubstituted  $C_{2-6}$  alkenyl, substituted or unsubstituted  $C_{2-6}$  alkynyl, unsubstituted  $C_{6-20}$  aryl or  $C_{6-20}$  aryl substituted with OH,  $C_{1-6}$  alkoxy[[,]] or  $N(R^{26})(R^{27})[[,]]$ ; alkylaryl in which the aryl moiety is substituted with one or more  $C_{1-6}$  alkyl groups further substituted with hydroxyl, protected hydroxyl, amino, protected amino, carboxy, protected carboxy, alkoxy, halo, CN, or  $NO_2$ , substituted or unsubstituted  $C_{4-20}$  heteroaryl,  $C_{10-20}$  diarylaminoaryl, or is absent, or B and D, together with  $R^5$  and  $R^{11}$ , are substituted or unsubstituted aryl; in which each of  $R^{26}$  and  $R^{27}$  is, independently, H, substituted or unsubstituted  $C_{1-6}$  alkyl, substituted or unsubstituted aryl, substituted or unsubstituted alkylaryl,  $NO_2$ , CN, or  $CO_2R^{28}$ , in which  $R^{28}$  is H or  $C_{1-6}$  alkyl;

wherein A is O, S,  $N(R^9)$  in which  $R^9$  is absent, H, substituted or unsubstituted alkyl, or substituted or unsubstituted aryl, N=N, or N=C( $R^{10}$ ) in which the C is adjacent to B and in which  $R^{10}$  is substituted or unsubstituted alkyl, or substituted or unsubstituted aryl;

wherein B is C or N;

Serial No.: 09/996,202

Filed: November 28, 2001

Page : 8 of 11

wherein D is N, NH, or C(R<sup>11</sup>) in which R<sup>11</sup> is substituted or unsubstituted alkyl, or substituted or unsubstituted aryl, or B and D, together with R<sup>5</sup> and R<sup>11</sup> are substituted or unsubstituted aryl; and

wherein E is C or Si;

provided that when A is O and D is N, then B is C and the floating double bond is between B and D;

further provided that when A is N(R<sup>9</sup>) and R<sup>9</sup> is absent, then B is N, R<sup>5</sup> is absent, D is NH, and the floating double bond is between A and B;

further provided that when A is N=N, then B is C, D is N, and the floating double bond is between B and D;

further provided that when A is  $N=C(R^{10})$ , then B is N,  $R^5$  is absent, D is  $C(R^{11})$ , and the floating double bond is between B and D;

further provided that when A is  $N(R^9)$  and  $R^9$  is H, alkyl, or aryl, then B is C, D is  $C(R^{11})$ , and the floating double bond is between B and D; and

further provided that when A is O or S and D is C(R<sup>11</sup>), then B is C and the floating double bond is between B and D.

- 16. (original) The device of claim 15, wherein A is O, B is C, and D is N.
- 17. (original) The device of claim 16, wherein each of  $R^1$ - $R^4$  is H.

Attorney's Docket No.: 08919-053001 / 03A-890425

Applicant: Chin-Ti Chen et al

Serial No.: 09/996,202

Filed: November 28, 2001

Page : 9 of 11

18. (original) The device of claim 15, wherein the compound has the following formula:

- 19. (canceled)
- 20. (original) The device of claim 15, wherein the compound has the following formula:

Attorney's Docket No.: 08919-053001 / 03A-890425

Applicant: Chin-Ti Chen et al Serial No.: 09/996,202 Filed: November 28, 2001

Page : 10 of 11

21. (original) The device of claim 15, wherein the compound has the following formula: